

***Federal Aviation Administration
Office of System Capacity***

***Capacity Enhancement
Developments and System
Performance Measures***

Recurrent AIP Training - Austin, TX

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Airport Capacity Enhancement

- FAA's 1997 Aviation Capacity Enhancement Plan
 - Procedural Initiatives
 - » Multiple Parallel Approach Program (MPAP)
 - » Converging Approach Program (CASTWG)
 - System Performance Measures
 - » Background
 - » Outcomes: Flexibility, Predictability, Access and Delay/CODAS





Airport Capacity Enhancement

- Multiple Parallel Approach Program -Duals
 - Independent - 3,400' w PRM
 - Independent - 4,000' w FMAs and Existing Radar
 - Independent - 3,000' w PRM and Off Set LOC
 - Independent - LDA - Very High Minimums
 - Dependent Parallels with 2,500' Separation
 - NEW AND NOT APPROVED: ILS/LDA to Closely Spaced Parallels w PRM
 - Currently No Simulations Scheduled





Airport Capacity Enhancement

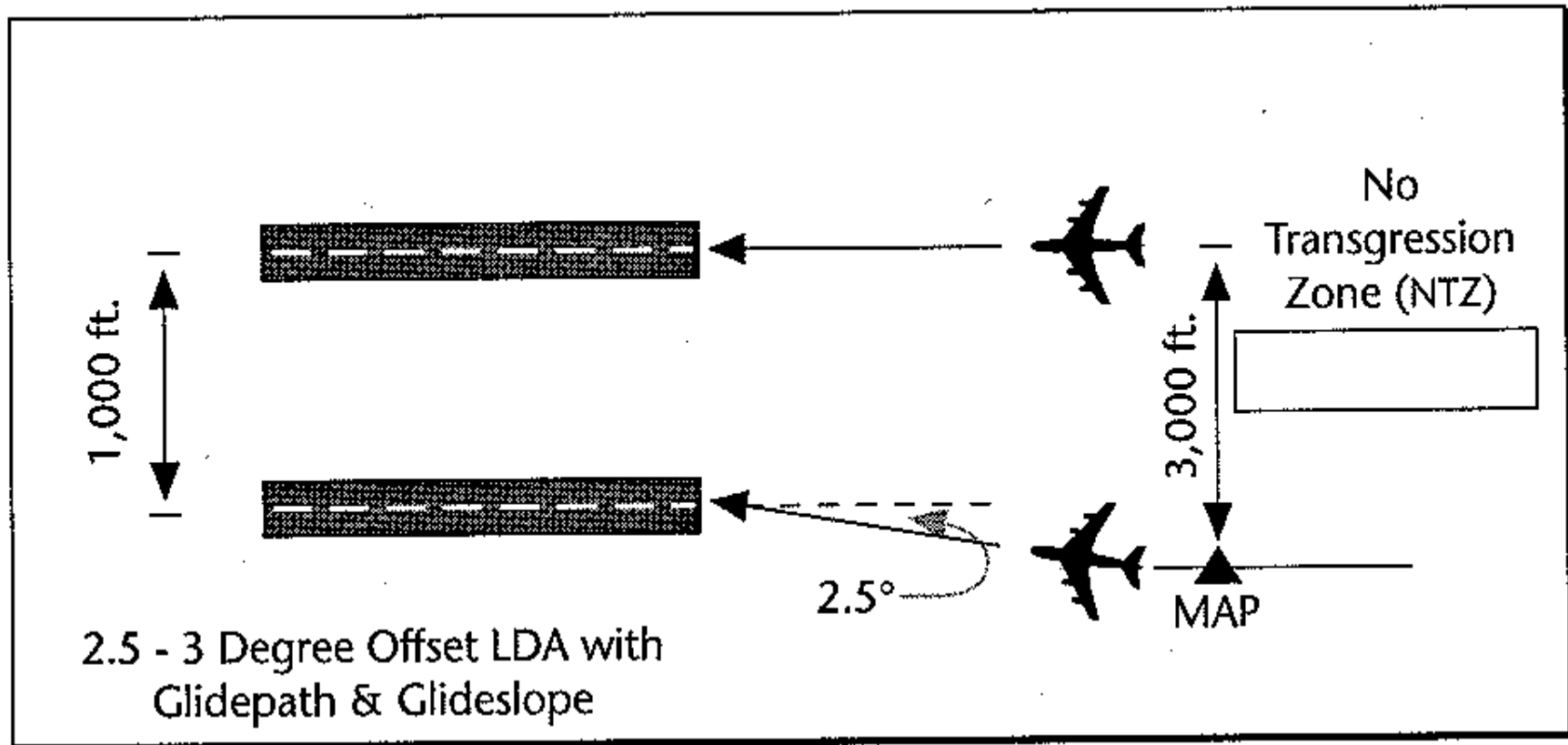
- ILS/LDA Duals to Closely Spaced Parallels
 - Uses/Combines Existing Equipment and Procedures
 - Independent - 3,000' w PRM and Off Set LOC
 - Independent - LDA - Adds Glideslope
 - NTZ Ends of 3,000' Separation/Missed Approach Point
 - Approach Minimums
 - » 1,400' Ceiling and 4 Miles Visibility
 - » 250' and 1 w DGPS/LAAS
 - Currently No Simulations Scheduled





Airport Capacity Enhancement

- ILS/LDA Duals to Closely Spaced Parallels





Airport Capacity Enhancement

- Multiple Parallel Approach Program -Triples
 - Independent - 5,000' w Existing Radar
 - Independent - 5,300' and 4,000' w PRM
 - » No National Standard - ATL and PIT Only Waivers
 - NEW and Not Approved: Independent - 3,500' w PRM
 - Currently 1 or 2 Simulations Scheduled
 - If 3,500' Fails, Then 2nd Simulation at 4,000' Runway to Runway to Runway Separation





Airport Capacity Enhancement

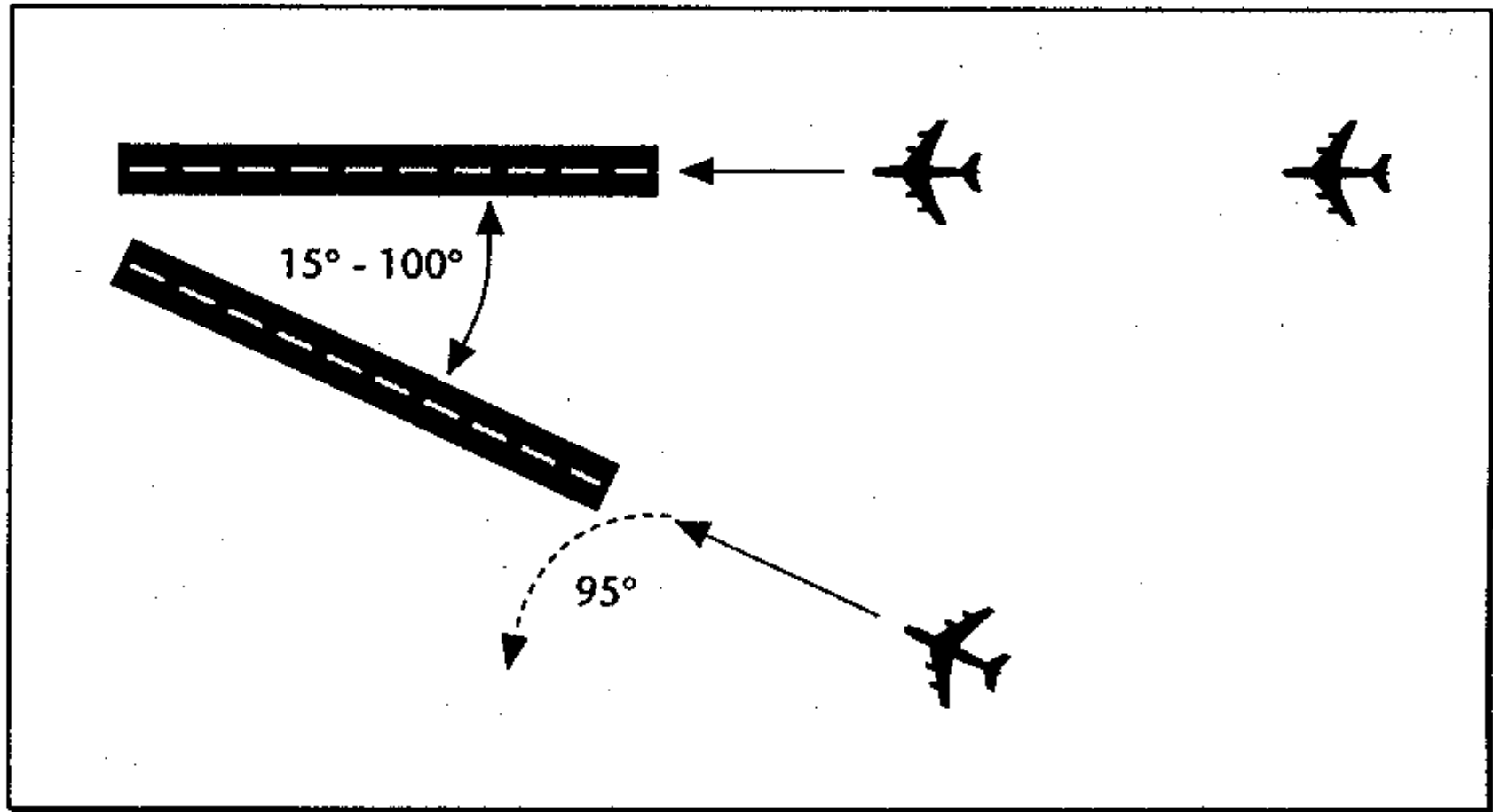
- Converging Approach Program
 - Dependent Converging Instrument Approaches (DCIA) Converging Runway Display Aid (CRDA) Ghosting
 - Simultaneous Operations on Intersecting Runways (SOIR) Land and Hold Short Operations (LAHSO)
 - Simultaneous Converging Instrument Approaches (SCIA) to Nonintersecting Runways w FMS
 - » 650' Ceiling and 2 Miles When Approved
 - » 500' and 1 1/2 Miles w/Additional Research
 - » 250' and 1 Mile Visibility w DGPS





Airport Capacity Enhancement

- Simultaneous Converging Instrument Approaches (SCIA)





Airport Capacity Enhancement

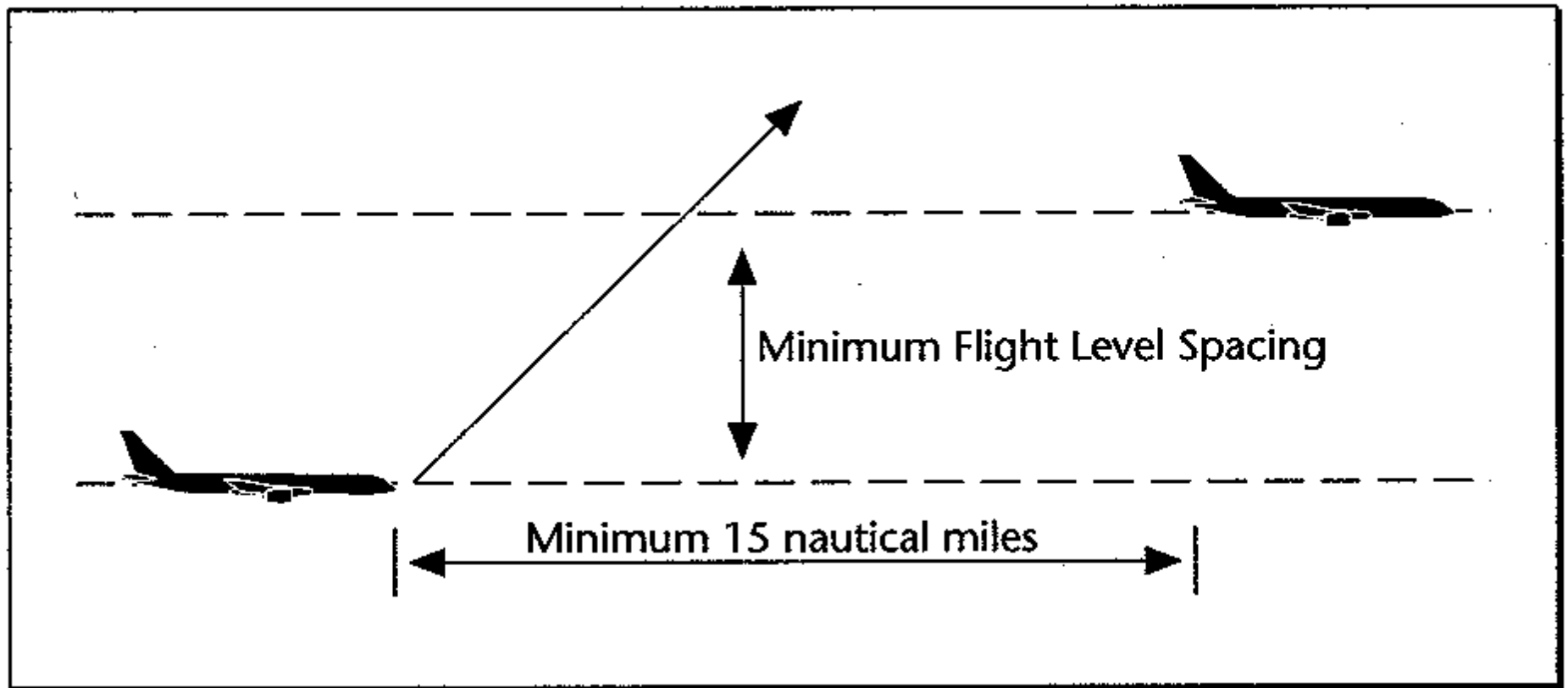
- Flight Management System (FMS) Approaches
 - Traffic Alert and Collision Avoidance System/Cockpit Display of Traffic Information - Limited Use in Oceanic In-Trail Climb
 - FMS Charted Visual Flight Procedures and ILS
 - FMS SIDs and STARs
 - FMS Providing Positive Course Guidance for Missed Approach Point for SCIA - Allows TERPS < 3 Miles
 - Transition into Free Flight





Airport Capacity Enhancement

- Oceanic In-Trail Climb or Descent





System Performance Background

- **Government Performance and Results Act**
 - Tied to Agency Budget in FY99
- **Customer Oriented Performance Measures**
 - RTCA Task Force 3, Various Customer & Interest Groups Roundtables and Free Flight
- **Outcomes not Outputs**
 - Some Funding Organized by Outcome Managers
- **21 Metrics Measuring 4 Outcomes**
 - Can Add, Delete or Revise Metrics as We Begin to Know the System Better and Changes in Customer's Priorities
- **Performance and Outcome Based Budget/Funding**
 - Establish and Readjust Prioritizes, Programs and Projects





System Performance Measures

- **Delay**

- The Amount of Time Required to Complete an Operation Beyond that Which is Considered Acceptable
- Last Filed vs. Actual Flight Record by Phase of Flight by City Pair

- **Flexibility**

- Ability of System to Meet User's Changing Needs
- Ability to Change Route and Altitude

- **Predictability**

- User's Confidence that a Given Departure Time will Result in a Given Arrival Time
- 10 Minutes of Actual vs. 40 Additional Minutes of Unknown

- **Access**

- Ability of User to Enter System & Demand/Obtain Services





System Performance Measures

- **Consolidated Operational Delay Analysis System**
 - Filed vs. Actual Flight Record by Phase of Flight by City Pair
 - Local And System Delay Costs Savings
- **Flexibility**
 - Bank Integrity CDM Airline Choice Which Flights Get Held
- **Predictability**
 - 10 Minutes of Actual vs. 40 Additional Minutes of Risk
 - Spread Sheet - Uses Model Outputs
- **Access**
 - Existing Metric - Precision and Instrument Approaches





System Performance Measures

- **AIRPORT SYSTEM/AIRPORT SPECIFIC METRIC**
 - **Delay Using CODAS**
 - » Phase of Flight by City Pair
 - » Local And System Delay Costs Savings
 - **Predictability**
 - » 10 Minutes vs. 40 Minutes of Uncertainty/Risk
 - » Air Traffic Services Metric Vs. Airports Office
 - » Customer Supported Outcome Measure
 - **Access**
 - » Precision and Instrument Approaches
 - » Other Customer Supported Inventory or Outcome Measures





Airport Capacity Enhancement

- Near-Term Major Capacity Enhancements
 - Multiple Parallel Approach Program (MPAP)
 - » ILS/LDA to Closely Spaced Parallels w PRM
 - » 3,500' Simultaneous Triples Spacing w PRM
 - Converging Approach Standards Technical Working Group (CASTWG)
 - » Simultaneous Converging Instrument Approaches to Nonintersecting Runways w FMS Equipped Aircraft





Airport Capacity Enhancement

- System Performance Measures
 - Transition Models for Future AT Modernization
 - » Decreased In-Trail Separation and Randomness
 - System Performance Measures
 - » 4 Measures, Flexibility, Predictability, Delay and Access
 - » Performance Based Budget
 - » More Measures and Metrics in Future





Air Traffic Services ATS - Office of System Capacity ASC

- Additional Information and Publications
 - 1997 Aviation Capacity Enhancement (ACE) Plan
 - Internet Address: donald.guffey@faa.dot.gov
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